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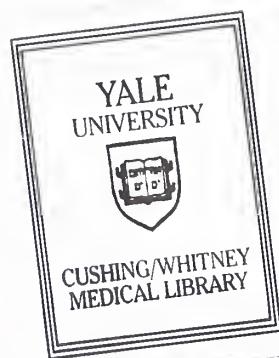
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The Use of Opioid Analgesics for Chronic Noncancer Pain
and the Management of Opioid Analgesic Misuse:
A Survey of Primary Care Physicians

Anita Roshani Chandrasena

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2002



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The Use of Opioid Analgesics for
Chronic Noncancer Pain and the Management of Opioid
Analgesic Misuse: A Survey of Primary Care Physicians

A Thesis Submitted to the
Yale University School of Medicine
in Partial Fulfillment of the Requirements for the
Degree of Doctor of Medicine

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Anita Roshani Chandrasena
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PHYSICIANS' ATTITUDES AND PRACTICES REGARDING THE CARE OF PATIENTS WITH CHRONIC NONCANCER PAIN. Anita R. Chandrasena and M. C. Reid. Department of Internal Medicine, Yale University, School of Medicine, New Haven, CT.

Chronic noncancer pain (CNCP) is common in primary care and often treated with opioid analgesics, but information regarding primary care providers' (PCPs) attitudes and practices in the care of patients with CNCP is lacking. We determined PCPs prior training in CNCP and assessed their levels of comfort caring for CNCP patients, prescribing opioid analgesics, and diagnosing/managing opioid analgesic misuse (OAM).

Participants included resident physicians (RPs) and attending physicians (APs) at a primary care clinic affiliated with an urban teaching hospital. A self-administered questionnaire was used to obtain information on PCPs' demographic status, prior training in the management of CNCP and use of opioids. We measured PCPs' levels of comfort caring for patients with CNCP and prescribing opioid analgesics, and determined their self-rated ability to diagnosis OAM. Open-ended questions were used to ascertain how PCPs diagnose and manage OAM.

Of the 57 PCPs surveyed, 53 (93.0%) responded. A majority was male (54.7%), the mean number of years (range) since medical graduation was 4.3 (1-33) and 71.7% were RPs. A minority of PCPs reported high levels of comfort when caring for patients with CNCP (41.5%) or when prescribing opioid analgesics (30.2%). APs expressed greater comfort than RPs in both areas (66.7% vs. 31.6%, P=0.020, and 53.3% vs. 21.5%, P=0.021, respectively). Only 20.8% of PCPs rated their ability to diagnose OAM as high. APs were more likely to rate their ability to diagnose OAM as high when compared with RPs (40.0% vs. 18.4%, P=0.100). Formal (vs. no) training in CNCP was correlated with higher comfort levels in the care of CNCP patients (53.3% vs. 26.1%, P=0.046). Formal training in CNCP and prescribing opioid analgesics had no significant impact on PCP comfort in the prescription of opioid analgesics and ability to diagnose OAM. Commonly reported patient behaviors cited as evidence of OAM included multiple requests for early refills (60.4%), reports of lost/stolen medications (39.6%), and requests for specific drugs or formulations (39.6%). Strategies commonly used to manage patients suspected of OAM included confronting patients to discuss concerns about OAM (69.8%), implementing opioid contracts in those lacking contracts (24.5%), and stopping opioid medications (17.0%).

Most participants felt uncomfortable providing care for patients with CNCP, prescribing opioid analgesics and diagnosing OAM. PCPs currently used a broad array of methods to diagnose and manage OAM. These data suggest that further education and the establishment of formal guidelines could help PCPs better manage patients with chronic noncancer pain.

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INTRODUCTION

Chronic noncancer pain (CNCP) is common in the U.S. population and is associated with substantial morbidity and healthcare costs (1). The World Health Organization defines “chronic” or “persistent pain” as pain that is present “most of the time” for a period of six months or more (2). More than 75 million people present to practicing physicians each year with some form of persistent or recurrent pain, and the prevalence of CNCP in primary care practices is estimated to be between 5 and 33%, with an average prevalence of 22% (2, 3). The medical and social consequences that result from CNCP are numerous. When compared to the general population, patients with CNCP are more likely to report impaired quality of life in the areas of physical, social, and psychological well being, have higher rates of depression and anxiety, and are five times more likely to utilize health care services when compared to patients without chronic pain (4).

Management strategies for CNCP typically include a broad spectrum of both nonpharmacologic and pharmacologic interventions. Patients with CNCP often require an individualized treatment regimen. However, many physicians often start with nonpharmacologic methods including stretching or strengthening exercises with physical therapy focusing on “reconditioning, stretching and pain reduction techniques” (4). In addition, most providers believe that providing education regarding the possible long-term nature of a patient’s symptoms, the physical and physiological basis of pain, and the possible consequences of pain, is of great importance (4). In addition to these tools, physicians managing patients with CNCP often utilize the expertise of psychologists, occupational therapists, and practitioners of alternative medicine. While these therapeutic interventions may improve patients’ level of pain

and assist in increasing their functional status, pharmacological therapies are also often required for long-term management.

A variety of pharmacological treatments are used in the care of patients with CNCP. The specific type of medication used often depends upon the etiology of the patient's pain and their comorbid medical status. Nonsteroidal anti-inflammatory drugs (NSAIDs) are often used as a first-line therapy. Many other classes of medications including acetaminophen, aspirin, tramadol, selective-serotonin reuptake inhibitors (SSRIs), tricyclic antidepressants (TCAs), neuroleptics, and opioid agonists are also used in the treatment of patients with CNCP (4).

The use of opioid analgesics in the treatment of CNCP continues to be an actively debated issue. Initially, the long-term treatment of pain with opioids was discouraged by pain experts because of concerns over their side effects (e.g., respiratory depression, sedation, tolerance) and the potential for addiction. Over the past two decades there has been a new willingness to prescribe opioid analgesics to patients with CNCP. This change in clinical practice is believed to be due, in part, to the successful experience of treating cancer patients with opioid medications. In addition, several case series have demonstrated the safety and relative efficacy of using this class of medications in the treatment of CNCP (5,6). Many experts believe that even though "there have been no long-term controlled studies investigating the efficacy of the chronic use of opioid analgesics for noncancer pain, good relief is generally reported for the majority of" patients with CNCP (4). A major issue related to the prescription of opioids for the long-term treatment of CNCP is the potential for physical dependence and the risks of abuse. Physical dependence is a physiological response that is characterized by the potential for withdrawal symptoms following discontinuation of therapy, dose reduction or administration of an antagonist (7). With opioids, physical dependence occurs at different rates for different patients

and according to Portenoy (7), patients should be presumed to be dependent following repeated doses of an opioid after a few days. The difference between analgesic misuse and dependence is complicated, especially in regards to opioid analgesics and so standard definitions of substance misuse are difficult to apply to patients using this class of drugs.

Understanding the definitions used by experts to describe various patterns of substance use and misuse is of great importance. The terms “physical dependence” and “tolerance” are considered normal consequences of long-term opioid use, however, they are often incorrectly classified as components of addiction. Addiction is defined as a “neurobehavioral syndrome with genetic and environmental influences that results in psychological dependence on the use of substance for their psychic effects and is characterized by compulsive use despite harm (1).”

Despite the previously noted concerns regarding the use of opioid medications in the care of patients with CNCP, use of opioid analgesics in this patient population is becoming increasingly common. Physician surveys conducted in 1989 (8) and 1993 (9) indicated that between 62 and 83% of pain specialists maintained at least some of their patients on chronic opioids for CNCP. However, the surveys also demonstrated that a substantial number of physicians are also reluctant to treat their CNCP patients with opioid analgesics. Reasons for the physicians’ reluctance included concerns regarding the unproven efficacy of opioid medications in the treatment of CNCP and the potential for opioid misuse (7).

According to other studies, the number of internists and non-pain specialists using opioid analgesics for the treatment of CNCP is also increasing (10). In a study of physicians’ attitudes and practices regarding the treatment of CNCP with opioid analgesics, Turk found that the prescription of long-term opioids is widespread (9). In this study, 6962 physicians were randomly sampled from different geographic regions and different specialties and surveyed to

obtain information regarding their number of years in practice, number of chronic pain patients treated, frequency of prescription of long-term opioids, concerns about opioids, goals of treatment, perceptions regarding their education in the area of prescribing opioids and concerns about regulation. Rheumatologists and general practitioners were most likely to prescribe long-term opioids and were more likely to look for symptomatic (subjective) improvement rather than functional (objective) improvements. This survey also revealed that many physicians felt their education regarding pain evaluation and treatment during both medical school and residency was inadequate (9). Most participants felt that the training they received during residency regarding the management of CNCP was more useful than the training they received during medical school. However, both were described as “less than” satisfactory. In addition, rheumatologists were the least satisfied with the training they had received and were also the most likely to prescribe opioid analgesics for CNCP. The findings from this survey indicate that greater attention needs to be given to covering pain evaluation and treatment during professional training. This study also illustrates that the most frequent problems noted by physicians treating patients with CNCP were intolerance to side effects, physical tolerance, withdrawal and abuse of these medications. Surprisingly, most participants believed that opioid analgesics were actually under-utilized and that addiction was over-emphasized.

A second study evaluated the knowledge of a broad spectrum of health care professionals’ by asking providers to rate the accuracy of a series of statements regarding the following topics: addiction, pain assessment, and scheduling of drugs (11). In this survey respondents (n=686) included physicians, nurses, pharmacists, and medical/nursing students from varying hospital settings, practice areas, and countries of origin. Survey questions were scored for accuracy with the percentage indicating the percent concordance. The average overall

correct score for the sample was 56%, with the physician group scoring the highest. Of the physicians, anesthesiologists scored the highest with surgeons scoring the lowest and internal medicine physicians falling in the middle. These findings indicate that while the prescription of opioids for the management of chronic pain is increasingly common, there are many misconceptions regarding these drugs including attitudes that may interfere with “optimal care” in areas including the assessment of pain, the pharmacological management of pain and the issue of analgesic misuse. The items corresponding with the most divergent opinions among participants were related to knowledge involving addiction and the most common misconception is that “addiction” to narcotics is far more prevalent among “pain” patients than it really is. Greater than three quarters of respondents believed that “25% of patients receiving around the clock narcotics become addicted.” The actual incidence of “addiction” is believed to be less than 1% (11). This indicates that physicians and other health care professionals are likely to fear addiction and consequently may be under-treating pain.

Both of the previously described studies illustrated the deficiencies in medical education/training regarding the assessment and treatment of patients with CNCP. The studies described conflicting theories regarding experience/education level and perceptions regarding chronic pain and opioid analgesic misuse. While both studies provided information regarding misconceptions health care professionals may have about the prescription of opioid analgesics and the risks of opioid analgesic misuse (OAM), both fail to provide information about the practical implications of these misconceptions. It is important to understand how the deficiencies in medical education translate into the care of the patient and to understand if there is a relationship between greater exposure to training in the topics of chronic pain and opioid analgesics and greater comfort in treating CNCP patients with opioids. Prior studies have not

attempted to examine the relationship between formal training and comfort in these areas. Demonstrating that formal training is associated with increased comfort in caring for CNCP patients on opioids would provide strong support for increasing the amount of formal training that health care providers receive in this area. However, if formal training is not correlated with increased comfort in the care of patients with CNCP using opioids, there would be evidence to indicate that the current methods to train physicians need to be updated and changed in order to provide physicians with the skills they need to better manage this group of patients.

Although prior studies focused on a broad spectrum of clinicians, they did not focus on obtaining data from primary care providers (PCPs). Because the number of PCPs dealing with the issue of opioid analgesic misuse is increasing (10), it is becoming increasingly important to appreciate their understanding of these issues and to learn what deficiencies exist in their training and education. In addition, looking at residents in internal medicine at differing stages in their training may also be useful in providing information about what specific steps need to be taken to improve medical education.

An additional challenge faced by health care providers in the care of patients with CNCP is establishing a firm diagnosis of OAM among patients suspected of misusing these medications. The diagnosis of OAM in patients with CNCP is a difficult task and a standardized set of tools to diagnose OAM has not yet been established. Patterns of behavior indicative of OAM such as escalating use, “drug seeking” behavior, and doctor shopping are discussed in the literature (12). Escalating use is one of the signals of OAM that physicians are taught to look for. However, it is important to note that the undertreatment of pain by underprescribing or by underestimating the magnitude of symptoms may also lead to escalating use. While all of these behaviors may be indicative of OAM, the complex psychosocial nature of CNCP makes it

difficult to make broad, general statements pertaining to OAM. Although experts have advocated that certain patient behaviors (e.g. escalating use, forged/stolen prescription, repeated requests for early refills) are indicative of OAM, their validity (as a diagnostic tool) has not been established. Because there is no consensus regarding how physicians should diagnose OAM, it is likely that physicians use a broad array of methods in their practice. Documenting this lack of uniformity would provide strong support for the development of a standardized clinical tool for the diagnosis of OAM. Studies are therefore needed to determine what methods clinicians use to identify OAM in their CNCP patients who receive opioid analgesics. In addition, such a survey may provide potentially valuable approaches for the identification of individuals at risk for OAM that could be subsequently evaluated in future studies.

Once the diagnosis of OAM is made, PCPs must then decide how to best manage their patients' pain complaints and their medication misuse. It is believed that pain cannot be adequately managed when complicated by misuse and many experts believe that it may even be worsened (13). Some of the methods to manage OAM in patients with CNCP described in the literature include referrals to specialty pain clinics, establishing closer and more intense clinic contact, adjusting medications, adding adjunctive treatments, reviewing clinic policy with patients and referring to substance abuse treatment programs (13,14,15). Another commonly cited method to manage these patients is to utilize an opioid contract. Opioid contracts serve to inform patients about the risks and benefits of opioid use and the conditions under which these medications will be prescribed. In addition, many pain experts believe that a lifetime or current substance use disorder should not preclude the use of opioid analgesics for the treatment of CNCP. However, they recommend that closer and more careful monitoring of medication use should occur (13). Although there are a broad array of methods to manage OAM, there are no

established guidelines outlining what steps PCPs should take to effectively manage their patients. Identifying the methods that PCPs use to manage patients with suspected OAM is important for several reasons. First, it is important to document what PCPs actually do when faced with the problem of OAM. Second, it is important to learn if PCPs are informed about what options are available to them as future research could aim to provide information to PCPs regarding the best ways to deal with OAM. Finally, it is important to ensure that patients are being treated adequately as now their PCPs must deal with two very complex problems, chronic pain and OAM.

STATEMENT OF PURPOSE

Hypotheses:

- Levels of comfort in the care of patients with CNCP, in the prescription of opioid analgesics, and in the ability to diagnose OAM are associated with level of medical training.
- PCPs use a broad spectrum of tools when identifying OAM and when managing patients who are suspected of OAM.

Purpose:

- To determine the proportion of PCPs with formal training in the areas of CNCP and prescription of opioid analgesics.
- To assess PCPs' self-reported level of comfort in the areas of CNCP, the prescription of opioid analgesics, and in the diagnosis of OAM.
- To evaluate the effects of formal training in the areas of CNCP and the prescription of opioid analgesics on self-reported level of comfort in (1) providing care to patients with CNCP, (2) prescribing opioid analgesics, and (3) diagnosing OAM.
- To identify patient behaviors that PCPs feel are indicative of OAM.
- To identify strategies PCPs use to manage patients suspected of OAM.

METHODS

Overview

This research project consisted of a cross-sectional study where a questionnaire was administered to PCPs who provided longitudinal care at the Primary Care Center (PCC) at Yale-New Haven Hospital (YNHH), in New Haven, CT. The study was conducted at the PCC, which is an urban hospital-based primary care clinic serving approximately 7,000 patients. This practice serves as a training site for internal medicine residents at the Yale University School of Medicine. The PCC at YNHH was chosen as the site of this study because of the diversity of the patient population, the prevalence of CNCP patients who receive long-term opioid analgesics, and the range of experience of PCC providers.

Study Participants & Corresponding Eligibility Criteria

1. Resident physicians (RP)—All categorical internal medicine residents who have their continuity clinic at the PCC at YNHH were asked to participate. The eligibility criteria included completion of medical school with an MD degree and willingness to participate.
2. Attending physicians (AP)—All internal medicine physicians who have completed residency training and are affiliated with the PCC at YNHH were asked to participate. The eligibility criteria included completion of medical school and residency training and willingness to participate.
3. Nurse practitioners—All nurse practitioners providing longitudinal care to patients at the PCC were asked to participate. The eligibility criteria included completion of nursing school with an APRN degree and willingness to participate. There was only

one nurse practitioner in the practice. This participant's responses were included with the RP group.

Survey and Sampling Procedure

Participants were approached during their continuity clinics and invited to complete the CNCP Education and Attitude Survey (Appendix 1). Providers were asked to complete the survey either at the beginning of their clinic session or in between patient visits throughout the day. The survey took between five and ten minutes to complete.

Description of Survey Instrument

- Demographic data: We obtained information on participants' demographic status including gender, type of degree earned, and number of years post-graduation (Questions 1-3).
- Formal training: We inquired about participants' prior formal training in the care of patients with CNCP and the prescription of opioid analgesics. Response categories for these questions included yes/no and for those who had received formal training response categories also included formal lecture, conference, seminar, workshop or other. Participants were asked to rate the usefulness of further training in these areas. A 5-point Likert scale was used and response categories for these questions included: Extremely valuable = 1, Very valuable = 2, No opinion = 3, Somewhat valuable = 4, Not valuable = 5 (Questions 4-5).
- Self-reported comfort: Participants were asked to rate their level of comfort in providing health care for patients with CNCP and for patients on opioid analgesics. A 5-point Likert scale was used and response categories for these questions included: Extremely comfortable = 1, Very comfortable = 2, No opinion = 3, Somewhat uncomfortable = 4, Very uncomfortable = 5 (Questions 6-7).
- Self-rated ability to diagnose OAM: Participants were asked to assess their ability to diagnose OAM using a 5-point Likert scale, response categories included: Excellent = 1, Good = 2, Fair = 3, Poor = 4, Extremely poor = 5 (Question 8).
- Tools and techniques: Open-ended questions were used to obtain information regarding specific patient behaviors or actions that participants felt suggested OAM. A second open-ended question was used to obtain information about how participants manage their patients once the diagnosis of OAM is made (Question 9-11).

- Discharge of patient from care: Participants were asked if they have ever discharged a patient from their care due to concern for substance misuse/abuse (Question 12).
- Experience with CNCP in personal acquaintances: Participants were asked if they have dealt with chronic pain in their personal lives (e.g. have they themselves had CNCP or known anyone personally who has had CNCP), (Question 13).

Data Entry

Data were recorded directly onto survey forms (see Appendix 1), and then entered into Epi Info. All of the computer data were manually checked against the survey forms, and any errors were immediately corrected.

Data Analysis

To test for group differences, χ^2 -tests were used for categorical variables and t-tests were used for continuous variables. A p-value less than 0.05 was considered statistically significant. All of the statistical analyses were completed on Epi Info.

Responses to open-ended questions were reviewed and coded independently by two reviewers and disagreements were resolved by consensus. Similar responses were assembled into discrete categories (e.g. refusing trials of nonopioids and missing scheduled appointments were included under noncompliant behaviors).

RESULTS

Demographics

Of 57 PCPs surveyed, 53 (93.0%) responded. A majority was male (54.7%), the mean (range) number of years since medical graduation was 4.3 (1-33) and 71.7% were RPs.

Formal training

The majority of participants (56.6%) reported formal training in the area of CNCP, (Table 1). Of the RPs, 50.0% reported formal training in CNCP, whereas 73.3% of APs reported training, however, this difference was not statistically significant ($P=0.123$). The majority of participants (64.2%) desired further training in CNCP regardless of prior formal training; APs were slightly more likely to desire further training (73.3% vs. 60.5%, $P=0.381$) than RPs. Formal training in the prescription of opioid analgesics was less common, as 47.4% of RPs and 53.3% of APs reported formal training in this area ($P=0.696$). The majority of PCPs (64.2%) desired further training in prescription of opioids regardless of prior formal training; RPs were slightly more likely than APs (65.8% vs. 60.0%, $P=0.692$), to desire further training (Table 1).

Self-rated comfort in the care of patients with CNCP

Less than half of the participants (41.5%) rated their comfort in the care of patients with CNCP as extremely or very comfortable. Residents had higher mean scores (2.5 vs. 3.2, $P=0.022$), where higher scores represent greater discomfort (Table 2). APs were more likely to rate their comfort level as extremely or very comfortable (66.7% vs. 31.6%, $P=0.020$), as compared to RPs (Table 3). Those who received formal training in CNCP were more likely to have higher comfort (extremely comfortable or very comfortable) levels than those who did not

(53.3% vs. 26.1%, $P=0.046$). In addition, those who received formal training in the prescription of opioid analgesics were also more likely to have higher comfort levels (50.0% vs. 33.3%, $P=0.218$) than those who did not receive formal training in this area (Table 3). Participants who had a personal acquaintance with CNCP were somewhat more likely to have expressed higher comfort levels (52.3% vs. 34.5%, $P=0.206$) than those who did not (Table 3).

Self-rated comfort in the prescription of opioids

Only 30.2% of participants rated their comfort in their prescription of opioids as extremely or very comfortable. RPs had higher mean scores (2.8 vs. 3.5, $P=0.025$) where higher scores represent greater discomfort (Table 2). APs were more likely to rate their comfort level as extremely or very comfortable (53.3% vs. 21.5%, $P=0.021$) compared to RPs (Table 4). Those who received formal training in CNCP were more likely to have higher comfort levels in the prescription of opioid analgesics (36.7% vs. 21.8%, $P=0.241$) compared to those who did not (Table 4). There was no difference in comfort in the prescription of opioids between those who received formal training in the prescription of opioids and those who did not (30.8% vs. 29.6%, $P=0.928$). In addition, those who had a personal acquaintance with CNCP were slightly more likely to report higher comfort levels than those who did not (38.1% vs. 24.1%, $P=0.288$).

Self-rated ability to diagnose opioid analgesic misuse

Only 20.8% of participants rated their ability to diagnose OAM as excellent or good. RPs had higher mean scores in self-rated ability to diagnose OAM (2.5 vs. 2.9, $P=0.046$) where higher scores represent greater discomfort (Table 2). APs were more likely to rate their ability to diagnose OAM as excellent or good (40.0% vs. 18.4% $P=0.100$), compared to RPs (Table 5). APs were more likely to rate their diagnostic ability as excellent or good (40.0% vs. 22.6%, $P=0.100$), when compared to RPs. Those who received formal training in CNCP were more

likely to rate their diagnostic ability as excellent or good (30.0% vs. 17.4%, P=0.290), compared to those who did not receive formal training in this area (Table 5). Those who received formal training in the prescription of opioid analgesics were slightly more likely to rate their diagnostic ability as excellent or good (26.9% vs. 22.2%, P=0.691). Participants who had a personal acquaintance with CNCP were more likely to rate their diagnostic ability as excellent or good (28.6% vs. 24.1%, P=0.724) compared to those who did not. Comfort levels in CNCP were correlated with self-rated diagnostic ability, as those who rated their comfort as high (extremely or very comfortable) were also more likely to rate their diagnostic ability as high (40.9% vs. 12.9%, P=0.020) compared to those who did not rate their comfort in CNCP as high. The same relationship holds true for comfort in the prescription of opioid analgesics and diagnostic ability (43.8% vs. 16.2%, P= 0.032).

Tools providers use to diagnose and manage OAM

Listed below are the responses participants provided when asked about behaviors/activities they look for when they are concerned about OAM (Table 6). Commonly reported patient behaviors cited as evidence of OAM included multiple requests for early refills (60.4%), reports of lost/stolen medications (39.6%), requests for specific drugs or formulations (39.6%), use of multiple sources to obtain opioids (34.0%), and increasing medication requirements (24.5%). Less commonly reported patient behaviors cited as evidence of OAM are also listed in Table 6.

Responses participants provided when asked how they manage OAM are listed in Table 7. Strategies commonly used to manage patients suspected of OAM included confronting patients to discuss concerns about OAM (69.8%), implementing opioid contracts in those lacking contracts (24.5%), discontinuing opioid medications (17.0%), and documenting OAM via

pharmacies and/or other providers (15.1%). Less commonly cited management techniques are also listed in Table 7.

Other Outcomes

The majority of participants (56.6%) prescribed opioid analgesics for the treatment of CNCP (Table 1), and there was no statistically significant difference between APs and RPs (53.3% vs. 57.9%, P=0.763).

Fewer than half of participants (39.6%) had a personal acquaintance with CNCP, APs were more likely to have an acquaintance with CNCP (66.7% vs. 28.9%, P=0.021) than RPs (Table 1).

The majority of participants (50.9%) reported having discontinued prescribing opioid analgesics to CNCP patients, APs were more likely to have discontinued treatment with opioids than RPs (73.3% vs. 42.1%, P=0.030), (Table 1).

DISCUSSION

Exposure to CNCP occurs either through formal means throughout medical training or through personal means (i.e. through clinical experiences). The majority of PCPs in our study reported prior formal training in the area of CNCP either through formal lectures, conferences or seminars. Approximately 40% of all PCPs have either personally experienced or have had an acquaintance who has experienced chronic pain, and APs were more likely to have had a personal acquaintance with CNCP. Despite having some prior formal training in the management of CNCP, the majority of PCPs (regardless of level of training) reported placing high value on further training in this area. This is consistent with previous research which indicated that most providers were dissatisfied with the training they received about CNCP during medical school or residency (9).

Exposure to formal training in the prescription of opioid analgesics is less common than training in CNCP, as less than 50% of all participants received formal training in the prescription of opioid analgesics. However, a significant proportion of participants reported placing high value on further training in the prescription of opioid analgesics, regardless of prior training. This finding suggests a greater need for future training and attention in this area.

Exposure to CNCP and training in the prescription of opioid analgesics is related to self-reported comfort in caring for patients with CNCP, the prescription of opioid analgesics and self-rated ability to diagnose OAM. The majority of participants are uncomfortable providing care for patients with CNCP. However, APs reported greater comfort than RPs. It is likely that a relationship exists between prior experience caring for patients with CNCP and comfort in this area. In addition, those who reported formal training in CNCP also reported higher comfort levels than those who did not. This implies that the training providers have received thus far

have led to subjective improvements in their ability to care for these patients. Interestingly, exposure to personal acquaintances with CNCP did not have a significant impact in this area. Therefore, both level of medical training and formal training in the care of patients with CNCP have led to subjective improvements in provider comfort in caring for patients with CNCP.

The majority of participants expressed discomfort in prescribing opioid analgesics. However, APs were more comfortable than RPs in this clinical task. In addition, formal training in the prescription of opioid analgesics did not have a significant impact on participants' comfort levels. Neither did exposure to personal acquaintances with CNCP. These data indicate that comfort with prescribing opioid analgesics is more dependent upon provider level of medical training with medications rather than formal training or nonclinical experiences. Although there is literature available which outlines treatment strategies utilizing opioid analgesics for the treatment of CNCP, there have been no well-established guidelines published regarding the prescription of opioid analgesics. As more research in this area becomes available, more education will be provided to PCPs. With new guidelines and improved training, providers are likely to feel more comfortable in their ability to prescribe opioid analgesics.

The majority of participants were uncomfortable diagnosing OAM, and level of training was not a factor associated with this outcome. As described in previous work, more experienced providers did not differ from less experienced ones (11). Other researchers have supported the idea that the experience of APs might be offset by more and better education in CNCP received by more recent graduates of medical school (11). However, in our sample there was no statistically significant difference between APs and RPs in their exposure to formal training in the areas of CNCP and the prescription of opioid analgesics. Therefore, the explanation regarding the quantity of training is not valid. The explanation regarding the quality of

education, however, may be more valid. In recent years, the attention paid to CNCP and the recognition of OAM in patients treated with opioid analgesics has increased, as has the amount of research in these areas. Perhaps this has led to improvements in the level of education provided to PCPs in more recent years.

Although there have been some improvements in the quality of education received as more information becomes available, further progress still needs to be made as formal training in caring for patients with CNCP, and in prescribing opioid analgesics, did not significantly improve provider comfort levels. These data indicate that the diagnosis of OAM continues to be an area of discomfort and none of the exposures are correlated with comfort regardless of the training received. As a result, further education and experience at all levels of training might be useful. Perhaps it is the absence of guidelines providing PCPs with standardized and practical tools to diagnose OAM that has left most PCPs feeling ill-equipped to deal with this complex issue. In the future, it will be interesting to see if the establishment of clear and objective guidelines to diagnose OAM will lead to improvements in physician comfort in the diagnosis of OAM (11).

The diagnosis of OAM in patients treated with opioid analgesics for CNCP continues to be an area of uncertainty for providers. When asked what behaviors providers look for in patients when OAM is suspected, participants reported a variety of behaviors and activities. The lack of consistency in participants' responses further reinforces our hypothesis that there is great uncertainty among PCPs in this area. According to Portenoy, a two-step approach should be adopted when attempting to diagnose OAM (16). A physician must (1) notice "aberrant drug-related behaviors" in patients and (2) find the "diagnosis that best explains the occurrence of the aberrant behaviors" and then decide whether those behaviors are consistent with the "diagnosis

of addiction or if they are associated with other psychiatric, social or behavioral problems” (16).

Many of the recommendations made in the literature in regards to this topic are often vague and open to interpretation. And so it is not surprising that providers utilize a broad array of techniques to screen for abuse, as many of the articles in the available literature fail to outline specific behaviors that providers should look for.

However, some of the most commonly reported behaviors in our study were also reported in previous work (7,12,13,14). They included requests for early refills, reports of lost or stolen prescriptions, the use of multiple sources for obtaining prescriptions and escalating medication use.

One article that does describe specific behaviors to look for is by Portenoy (7). In this work a core group of “aberrant drug-related phenomena” are outlined and include “loss of control over drug use, compulsive drug use, and continued use despite harm.” In addition, lists of “predictive aberrant behaviors” and “less predictive aberrant behaviors” are included. However, it is important to note that these lists are based on expert opinion and have not been validated. Some of the “predictive” behaviors include selling prescribed drugs, prescription forgery and stealing/borrowing drugs from others. A few of the “less predictive” behaviors include aggressive complaining about the need for more drug, drug hoarding during periods of decreased symptoms, requests for specific drugs, unsanctioned dose escalation or other non-compliance with therapy on one to two occasions, and unapproved use of the drug to treat symptoms other than pain (7). Interestingly, some of the behaviors described as “less predictive” of misuse in this study were the same behaviors providers in our study mentioned as indicators of abuse. They include requests for specific drugs or formulations, displays of hostile/angry behaviors when discussing pain/drug regimens, and noncompliance with scheduled

appointments. This discrepancy cannot be resolved as further studies are needed to validate the behaviors listed above.

One of the indicators of OAM described by participants was a history of current or past abuse. This is supported by several authors who identified patients treated with opioid analgesics with a personal or family history of substance abuse as being at increased risk for future OAM or abuse of other substances (17). Some authors even argue that patients with a prior history of substance abuse should not be prescribed opioid analgesics for CNCP (12). Even though most authors disagree with the above statement, some argue that a personal (but not family) history is more prevalent in patients diagnosed with OAM as compared with controls (13). However, others state that a history of prior drug or alcohol abuse did not predict “who would later become opiate abusers” (14). The literature does not support nor refute whether a prior personal or family history of substance abuse is indicative of future abuse and the question remains if this history should be used to screen for current OAM.

Kouyanou et. al. state that the incidence of depression in groups with medication abuse and dependence is elevated (18). In addition, one participant in our survey stated that symptoms of depression were included in their screen for OAM. This is an interesting issue as it is believed that symptoms of depression and anxiety modulate an individual’s perception of pain (19). The question remains if the depressed patient is truly misusing their opioid analgesics and using their pain medications to treat other symptoms or if their perception of pain has increased and they are requiring more medications to help to cope with their pain.

Some of the behaviors participants listed in our study that were novel included refusal of trials of nonopioid medications, lack of objective signs/symptoms, unclear etiology of pain, reports of allergies to nonopioid medications, failure to attend specialty referral appointments,

and violation of an opioid contract (Table 5). All of these behaviors represent new ways to approach the problem and perhaps when combined with more commonly used techniques may be effective ways to determine if a patient is misusing their opioid analgesics. Future research in this area is needed to determine whether the patient behaviors identified in this study are independent predictors of OAM.

Once the diagnosis of OAM is made, the PCP has to then decide how to confront the issue and manage the patient's pain complaints. The majority of PCPs sought to confront the patient directly and discuss his/her concerns with the patient. Other frequently reported activities included discussing and formally establishing an opioid contract with patients without existing contracts, discontinuing the prescription of opioids, documenting OAM through confirming misuse with pharmacies and/or other providers, and outlining and reviewing terms of opioid contracts but continuing to prescribe opioids for those who had a contract. Some of the actions outlined in the literature include some of the above mentioned actions. Chabal et. al., describe the following steps to be taken after OAM is suspected: reassess patient's condition, provide closer/more intense clinic contact if needed, adjust medications, add adjunctive treatments and review clinic policy on opioid use (14). Although these steps were described for a pain clinic, they are likely to be applicable to a primary care practice that is capable of providing these services.

Referral to specialty pain clinics is one way PCPs manage their patients with CNCP on opioid analgesics. Chabal states that "most of the patients using opiates were referred to the pain clinic from primary care clinics solely for reasons related to their use of opiates." He continues to say that in most cases these patients were a source of conflict in their former clinic and that 95% of these "problem patients" were effectively managed on opioid analgesics in the pain clinic

setting (14). Three participants in our study reported that they refer to specialty care including substance abuse treatment programs, psychiatrists and pain specialists. Chabal's data imply that referral to specialty pain clinics is another viable method to assist PCPs in managing their patients treated with opioid analgesics for CNCP when OAM is suspected (14). This as well as the other management techniques discussed above should be examined more closely in future studies to determine their efficacy.

There are several limitations of this study that deserve comment. The first of the limitations is the small sample size. However, it is important to note that this is the first study to examine these specific issues with PCPs, and future studies can be conducted with larger samples in order to study these topics more closely. A second limitation is the small number of APs compared to RPs, which was difficult to avoid given the nature of the study site. Being a continuity clinic for a teaching hospital, the number of RPs is expected to be greater than the number of APs. A third limitation is the specific nature of the patient population. The PCC patient population is an urban one and the unique characteristics of the patients are likely to influence the responses of the participants. As a result, the findings of this study may not be generalizable to other primary care practices. Future research can work to improve the generalizability by sampling PCPs from a variety of practice settings. A fourth limitation is that the reliability of participant responses was not established. This also needs to be studied in future work. Finally, failure to inquire about the usefulness of the training that participants have received prevents us from strengthening the relationships between formal training and comfort levels in caring for patients with CNCP, the prescription of opioids, and diagnosing OAM.

CONCLUSION

In conclusion, our findings indicate that most PCPs lack confidence in the care of patients with CNCP, the prescription of opioid analgesics and the diagnosis of OAM. While the care of patients with CNCP using opioid analgesics has been examined in prior studies, this is the first project to focus on PCPs at all levels of post-graduate training. Also, this was the first study that attempted to examine the relationships between formal training and PCP comfort in caring for patients with CNCP, the prescription of opioid analgesics and the diagnosis of OAM. Our findings indicate that provider comfort in caring for patients with CNCP is related to previous experience and formal training, whereas comfort in the prescription of opioid analgesics is related to previous experience alone. Comfort in the diagnosis of OAM was not related to either. In addition, a substantial majority of participants believe that further education in these areas is needed during medical training. These data support previous research which found that the education physicians receive in the areas studied needs to be improved in order to provide physicians with the training needed to successfully care for their patients with CNCP using opioid analgesics.

Furthermore, our study has shown that PCPs use a broad array of strategies to diagnose and manage OAM. Many of the strategies identified in our study have been discussed in the literature, along with several others. However, all of these strategies need to be empirically tested in order to further assess their utility and clinical application. Finally, future studies are needed to define optimal approaches for the management of CNCP, the prescription of opioid analgesics, and to develop objective and valid methods for the diagnosis of OAM in order for PCPs to manage their patients with greater confidence and success.

Table 1. Demographic data and experience with chronic noncancer pain

Attribute	AP (n=15)	RP (n=38)	All (n=53)	p- value*
Male, (%)	46.7	57.9	54.7	0.405
Years post-graduation \pm SD	10.2 \pm 8.1	2.0 \pm 0.9	4.3 \pm 5.7	<0.001
PCPs managing patients with CNCP on opioid analgesics, (%)	53.3	57.9	56.6	0.763
Formal training in CNCP [†] , (%)	73.3	50.0	56.6	0.123
Utility of further training in CNCP, (%)	73.3	60.5	64.2	0.381
Formal training in POA [‡] , (%)	53.3	47.4	49.1	0.696
Utility of further training in POA, (%)	60.0	65.8	64.2	0.692
Personal acquaintance with CNCP, (%)	66.7	28.9	39.6	0.021
History of discontinuing POA, (%)	73.3	42.1	50.9	0.030

* P-value for test of differences between APs vs. RPs.

[†] Chronic noncancer pain.

[‡] Prescription of opioid analgesics.

Table 2. Mean self-rated comfort levels in chronic noncancer pain, the prescription of opioids and the diagnosis of opioid analgesic misuse

Attribute	AP (n=15)	RP (n=38)	All (n=53)	p- value*
Mean self-rated comfort in CNCP [†] \pm SD	2.5 \pm 1.1	3.2 \pm 0.9	3.0 \pm 1.0	0.022
Mean self-rated comfort in POA [‡] \pm SD	2.8 \pm 0.9	3.5 \pm 1.2	3.3 \pm 1.1	0.025
Mean self-rated ability diagnosing OAM [§] \pm SD	2.5 \pm 0.6	2.9 \pm 0.6	2.8 \pm 0.7	0.046

* P-value for test of differences between APs vs. RPs.

[†] Chronic noncancer pain.

[‡] Prescription of opioid analgesics.

[§] Opioid analgesic misuse.

Table 3. Self-reported comfort in caring for patients with chronic noncancer pain

Specific characteristic	High [*] level of comfort in caring for patients with chronic noncancer pain	p-value
AP vs. RP	66.7% vs. 31.6%	0.020
Formal (vs. no) training in CNCP [†]	53.3% vs. 26.1%	0.046
Formal (vs. no) training in POA [‡]	50.0% vs. 33.3%	0.218
Personal (vs. no) acquaintance with CNCP	52.3% vs. 34.5%	0.206

^{*} Includes responses of extremely comfortable or very comfortable vs. no opinion, somewhat uncomfortable, or extremely uncomfortable.

[†] Chronic noncancer pain.

[‡] Prescription of opioid analgesics.

Table 4. Self-reported comfort in the prescription of opioid analgesics

Specific characteristic	High* level of comfort in the prescription of opioid analgesics	p-value
AP vs. RP	53.3% vs. 21.5%	0.021
Formal (vs. no) training in CNCP [†]	36.7% vs. 21.8%	0.241
Formal (vs. no) training in POA [‡]	30.8% vs. 29.6%	0.928
Personal (vs. no) acquaintance with CNCP	38.1% vs. 24.1%	0.288

* Includes responses of extremely comfortable or very comfortable vs. no opinion, somewhat uncomfortable, or extremely uncomfortable.

[†] Chronic noncancer pain.

[‡] Prescription of opioid analgesics.

Table 5. Self-rated ability to diagnose opioid analgesic misuse

Specific characteristic	High [*] self-rated ability to diagnose opioid analgesic misuse	p-value
AP vs. RP	40.0% vs. 22.6%	0.100
Formal (vs. no) training in CNCP [†]	30.0% vs. 17.4%	0.290
Formal (vs. no) training in POA [‡]	26.9% vs. 22.2%	0.691
Personal (vs. no) acquaintance with CNCP	28.6% vs. 24.1%	0.724
High [§] comfort in CNCP	40.9% vs. 12.9%	0.020
High ^{**} comfort in POA	43.8% vs. 16.2%	0.032

^{*} Includes responses of excellent or good vs. fair, poor or extremely poor.

[†] Chronic noncancer pain.

[‡] Prescription of opioid analgesics.

[§] Includes responses of extremely comfortable or very comfortable vs. no opinion, very uncomfortable, or extremely uncomfortable.

^{**} Includes responses of extremely comfortable or very comfortable vs. no opinion, very uncomfortable, or extremely uncomfortable.

Table 6. Reported indicators of opioid analgesic misuse in patients with chronic noncancer pain

Characteristic	n	% PCPs (n=53)	% responses (n=161)	% RP (n=38)	% AP (n=15)
Increasing medication requirements					
Early refills	32	60.4%	19.9%	55.3%	73.3%
Lost/stolen prescriptions	21	39.6%	13.0%	29.0%	66.7%
Multiple sources of prescriptions	18	34.0%	11.2%	21.1%	66.7%
Repeated requests for increased dose or number of pills	13	24.5%	8.1%	21.1%	33.3%
Requests for specific drugs or formulations	21	39.6%	13.0%	36.8%	46.7%
Noncompliant behaviors					
Refusing trials of nonopioids	9	17.0%	5.6%	13.2%	26.7%
Missing scheduled appointments	5	9.4%	3.1%	10.5%	6.7%
Failure to attend specialty referral appointments	1	1.9%	0.6%	2.6%	0%
Violation of opiate contract	1	1.9%	0.6%	2.6%	0%
“Poor compliance”	1	1.9%	0.6%	2.6%	0%
Displays hostile, angry or defensive behavior when discussing pain/drug regimen	8	15.1%	5.0%	15.8%	13.3%
History of current or past substance abuse					
Lack of objective signs/symptoms	6	11.3%	3.8%	10.5%	13.3%
Reports of abuse/misuse from third parties (family, friends, or visiting nurses)	7	13.2%	2.6%	13.2%	13.3%
Other *	1	1.9%	0.6%	0%	6.7%
	17	32.1%	10.6%	31.6%	33.3%

* Includes “manipulative behaviors” (n=5), unclear etiology of pain (n=3), “narcotic seeking behaviors” (n=2), reports of allergies to nonopioid meds (n=2), elaborate history (n=1), failure to adhere to boundaries (n=1), not bringing prescription bottles when requested (n=1), depressive symptoms (n=1) and refusal to taper meds (n=1).

Table 7. Methods primary care physicians use to deal with patients suspected of opioid analgesic misuse

Characteristic	n	% PCPs (n=52)	% responses (n=155)	% RP (n=38)	% AP (n=15)
Confirm diagnosis					
Confront patient and discuss concerns	37	69.8%	39.8%	63.2%	86.7%
Document opioid analgesic misuse/abuse (includes confirming with pharmacies and/or other providers)	8	15.1%	8.6%	13.2%	20.0%
Utilize opiate contract					
Discuss/contract formally with patients without existing opioid contract	13	24.5%	14.0%	18.4%	40.0%
Outline and review terms of contract and continue to prescribe opioids	7	13.2%	7.5%	10.5%	20.0%
Outline and review terms of contract and discontinue opioid prescriptions	2	3.8%	2.2%	5.3%	0%
Discontinue/change treatment regimen					
Discontinue prescription of opiates	9	17.0%	9.7%	13.2%	26.7%
Wean medications/discuss possibility of weaning trial	5	9.4%	5.4%	10.5%	6.7%
Change drug regimen	1	1.9%	1.1%	2.6%	0%
Refer to specialty care (includes substance abuse treatment, program, psychiatry referral or pain specialist referral)	3	5.7%	3.2%	0%	20.0%
Other *	8	15.2%	8.8%	15.7%	13.4%

* Includes schedule frequent visits to assess abuse (n=2), review terms of medication use (n=2), discharge patient from care (n=1), do not confront patient (n=1), look for physical signs of abuse (n=1), discuss with attending (n=1).

APPENDIX 1

PHYSICIAN & NURSE PRACTITIONER SURVEY QUESTIONNAIRE

1. Gender: Male/Female

2. Type of degree: M.D. Nurse Practitioner Other (please specify): _____

3. What year did you graduate from medical, P.A. or nursing school? _____

4. Have you had any formal training (such as workshops, noon conferences, etc) in the management of chronic pain?

4a. If yes, in what setting: Formal lecture
 Conference
 Seminar
 Workshop
 Other (please specify) _____

4b. If yes: How valuable would additional training be on this topic?

4c. If no: How valuable would training on this topic be?

5. Have you had any formal training (such as workshops, noon conferences, etc) in the use of prescription opiates for patients with chronic noncancer pain?

5a. If yes, in what setting: Formal lecture
 Conference
 Seminar
 Workshop
 Other (please specify) _____

5b. If yes: How valuable would additional training be on this topic?

5c. If no: How valuable would training on this topic be?

6. How comfortable do you feel providing care for patients with chronic non-cancer pain?

7. How comfortable do you feel prescribing opiate analgesic medications for patients with chronic noncancer pain?

1 2 3 4 5 N/A REF
 Extremely Very No Opinion Somewhat Extremely
 Comfortable Comfortable Uncomfortable Uncomfortable

8. How would you rate your ability to diagnose opiate analgesic misuse in patients with chronic noncancer pain who are on opiate medications?

1 2 3 4 5
Excellent Good Fair Poor Extremely poor

9. What behaviors/activities do you look for in chronic noncancer pain patients treated with opioid analgesic medications that suggest misuse or abuse of these medications?

10. What do you do when you suspect opiate misuse or abuse?

11. What do you say to your patients when you suspect opioid analgesic abuse/misuse?

12. Have you ever stopped treating (or discharged) a patient from your care because of suspected or proven opioid analgesic misuse/abuse?

YES NO DK REF

13. Have you or anyone you have personally known (e.g. family members, relatives, friends, acquaintances, etc.) experienced chronic noncancer pain?

YES NO DK REF

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